Standing Waves and Acoustic Resonance Soundtrack

This is the soundtrack for the Standing Waves and Acoustic Resonance video. It is keyed to the scene number.

Scene	Voice Track
1.	The video is part of a web-based package on the Standing Waves and Acoustic Resonance experiment. It introduces the apparatus that will be used to perform the experiment
2.	Here is the apparatus for the Standing Waves experiment. It includes an oscilloscope. The oscilloscope you use may not look like this one. There is also a signal generator, which you will use to generate a voltage which varies in time as a sine wave. Your signal generator may not look like this one. The signal generator will produce a sound wave in this part of the apparatus.
3.	Inside this box is a loudspeaker, which will generate a sound wave in the air. You will connect the signal generator to the loudspeaker here. The sound wave will be generated in this plexiglass tube that contains air. The right hand side of the tube has a wooden barrier, which will reflect the sound wave generated by the loudspeaker. The barrier may be removed, which you will do in a later part of the experiment. Inside the tube is a microphone for measuring the sound wave. It is mounted on a rod, which allows the position of the microphone to be moved back and forth in the tube.
4.	Here is the oscilloscope. The input signal to be measured by the scope is connected here on this model. The input is called a bnc socket. Cables with bnc connectors like this one plug right into the socket.
5.	Here is a diagram of a coaxial cable like the one we just connected to the oscilloscope. Note that it is essentially two wires; the inner metal core and the outer metal sheath.
6	Here is the signal generator. This model has a bnc socket for the output. Thus we can measure the output of the signal generator with the oscilloscope by connecting them together with a cable.
7.	Here are the connectors for the loudspeaker. They are not bnc sockets. These connectors require banana plugs on the end of the cable. We want to connect the loudspeaker to the signal generator. The cable connected to the speaker has a bnc connector on the other end. However, we also want to use the scope to monitor the output of the generator. The scope is already connected to the output of the signal generator.
8	This is called a tee, and will allow us to connect the generator to both the speaker and the scope. There is a bnc connector on the vertical part of the tee. There are also two bnc sockets to which we can connect the cables.
9.	Here is the signal generator with the scope still connected to its output. First we disconnect the cable to the scope. Then we can connect the tee to the signal generator. Then we can re-connect the cable from the scope to the tee. On the other side of the tee we connect the cable to the speaker. Now the signal generator is connected to both the speaker and the oscilloscope.
10	Some of our signal generators do not have bnc outputs, but require a banana plug cable. These cables have banana plugs on both ends. We connect one end of each to the generator and the other ends of the cables to the loudspeaker inputs.
11.	The banana plugs have built in tees, holes in the plugs themselves. So here we can connect another pair of cables to connect to the oscilloscope.

12.	Here is the input to the oscilloscope. Of course, it requires a bnc connector. This adapter allows the banana plugs to be plugged into it and it has a bnc connector to plug into the oscilloscope. We can connect the adapter to the oscilloscope. And then the cables to the adapter. Notice that the red cable is connected to the center "hot" connector, and the black cable is connected to the outer input.
13.	Here is the apparatus we began this video with. The signal generator is connected to both the loudspeaker and the oscilloscope. When the signal generator is turned on we see its output on the scope. We can also hear the sound in the tube. [a sine wave sound fades in and out] We shall use the other beam on the oscilloscope to monitor the sound wave measured by the microphone inside the tube. The cable connected to the microphone has a bnc connector, so we just plug it in to the other beam's input on the oscilloscope. So now we will monitor the signal being sent to the loudspeaker with one beam of the oscilloscope, and monitor the signal picked up by the microphone with the other beam.
14.	This completes the video introduction to the Standing Waves apparatus. There is still important information to learn on doing this experiment from the associated web site.